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ABSTRACT

This report describes the development of a distance learning curriculum package designed to teach the skills of presenting, analyzing, and evaluating statistical information to middle-management-level librarians and information officers. Originally developed by the School of Librarianship and Information Studies at Newcastle upon Tyne Polytechnic because of problems encountered by librarians in obtaining time off from work to attend short courses or pursue a degree on a part-time basis, the full-scale course now lasts for 13 weeks, and a certificate is awarded upon its completion. The project development process is outlined, research methodology is explained, project funding is considered, and further developments are discussed. It is concluded that the project has demonstrated the possibility of developing a distance learning course in data presentation and has established a model that can be used in other subject areas in librarianship and other fields. The following information is included in five appendices: (1) an outline of the course; (2) individual unit evaluation form; (3) pilot course final evaluation form; (4) Interim Report to the Further Education Unit (FEU); and (5) the September 13, 1983 (full-scale) course evaluation form. (KM)

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ED278394

FINAL REPORT
TO F.E.U. ON

STATISTICS FOR LIBRARIANS
PRESENTATION OF DATA

R.P. 121 - PICKUP

U.S. DEPARTMENT OF EDUCATION
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NEWCASTLE UPON TYNE POLYTECHNIC

PROJECT LEADER - E. BLACKIE

IR051753

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A Course Content

B Evaluation of Individual Unit

C Evaluation of Course

D Interim Report on Pilot Course

E Evaluation of September Course

1.0 AIM of the PROJECT titled

"Distance Learning Package on Statistics for Librarians"

(R.P. 121/PICKUP*)

To develop a distance-learning curriculum package for teaching the skills of presenting, analysing and evaluating statistical information to librarians and information officers.

* PICKUP(Professional, Industrial and Commercial Up-dating) is the name of the DES initiative designed to follow up its discussion paper Continuing Education (October 1980) and the responses to it.

2.0 Introduction

In September 1983 the School of Librarianship and Information Studies at Newcastle Polytechnic launched a distance learning course, "Statistics for Librarians - Presentation of Data". This is a short course on the methods of presenting statistical data in the form of tables and diagrams, prepared both manually and by computer. The course, which lasts for 13 weeks and involves 4/5 hours work per week is for librarians and information workers at middle-management level. The development of the course has been supported by a PICKUP grant which paid for the services of a research worker, Mrs Stephanie Barber M.A. MSc to help with the preparation, administration and evaluation. The PICKUP grant was awarded because the project fulfilled the necessary criteria of providing up-dating of skills.

2.1 This report outlines the background to the development, explains the methodology of the research, considers the implications of the results and suggests recommendations for future course developers, writers and funding bodies.

3.0 Background of the Project

The School of Librarianship and Information Studies at Newcastle Polytechnic has run a short course programme for librarians, information workers and sometimes teachers, for many years. It also had a part-time B.A. which allowed librarians to convert their 2 year certificate to a degree. Recruitment on both the short courses and the part-time B.A. declined sharply in recent years, despite evidence of continuing demand within the professions. This decline was simply because potential students could not get time off work to attend because of growing economic stringencies. Consequently it was decided to take the course to the students instead of vice-versa. The Council for Educational Technology recommend that college-based systems should first be developed before distance learning systems so that the writers can gain experience of constructing learning packages and be able to evaluate the effectiveness of the learning materials at first hand with students. However, it was felt that for this target group, the students could not attend the Polytechnic anyway so the C.E.T. approach would not be useful for the School's needs.

3.1 A small working party was set up to explore the possibilities of developing distance learning. This group consisted of:

a) Jim Stephenson, who had experience of producing learning packages in the Polytechnic's Travelling Workshops experiment. He subsequently was responsible for two projects on the production of packages on patents, viz

Use of Patent Information in Industry - sponsored by The British Library, 1979-81 Training Packages in Patent Information and Documentation, sponsored by the E.E.C. 1980-82.

b) Sandra Parker, the School's Liaison and Training Officer, whose work involves extensive contact with practising librarians and information workers.

c) Edna Blackie, Co-author of open-learning packages for teachers, developed with the aid of a Nuffield Grant, 1977-80. Subsequently Member of C.E.T. team of Open Tech Consultants. Eventually project leader for "Statistics for Librarians - Presentation of Data".

3.2 This working party attempted to identify the administrative constraints which attend the development of distance learning. These included

Resource availability

Staff/Student Ratios

Full Time Equivalents

Time-table allowances

Student Fees

Validation

3.3 Fortunately the first problem, resources, was solved in the short term by the Polytechnic's Educational Development Service. They offered to support the initial developments as a "pump-priming" exercise. This gave word processing time, graphic expertise, advice on lay-out and materials and help with evaluation.

3.4 The other points listed above were eventually solved but only after much time spent in meetings as there were no regional or L.E.A. guidelines.

3.5 Validation was seen as a great restraint on innovation. The School had hoped eventually to convert its part-time B.A. to a distance-learning course but realised that C.N.A.A. would look more favourably on this re-validation if expertise had already been acquired in distance learning by developing short courses first which would only require internal validation.

3.6 The greatest need was that staff should acquire expertise in developing distance learning materials. Written packages, as opposed to tape-slides, videos or interaction with computer terminals, were thought to be more familiar to use, less expensive and possibly quicker to produce. Therefore a subject which could be satisfactorily produced in this format was chosen, viz,

"Statistics for Librarians - Presentation of Data". Ian Simpson, the author of Basic Statistics for Librarians, 2nd ed., Bingley, 1983 was keen to develop some of the content of his book in open-learning format. This enthusiasm, the fact that such information could be communicated via print and the knowledge that there was a perceived demand for such a course, explained below, were the reasons for choosing it as the subject for the first distance learning course.

3.7 The planning group was widened to include the heads of the Recurrent Education Service and Educational Development Service. The Assistant Director of the Polytechnic, also took a great deal of interest in the development of the course.

3.8 During the Summer Term, 1982, the Recurrent Education Service received details of the PICKUP criteria for awarding grants of up to £10,000 for course development. It was recognised that "Statistics for Librarians - Presentation of Data", fell within the guidelines for the re-training of adults in jobs affected by the impact of

information technology, and an application for a grant to provide research assistance to evaluate the course was successful.

3.9 The need for a course on the presentation of statistical data arises from the following trends

a) The increasing need under growing economic pressures, for librarians and information workers to become more conscious that descision making must be based on hard facts. The availability of information technology for the handling, manipulation and graphical display of numerical data makes such hard facts more readily available.

b) The growing quantity of information being presented as numerical data, especially by the media, which librarians and information workers are having to read and interpret.

c) Many of the target population of 5000-9000 information workers who could possibly wish, or need to up-date their knowledge of presenting statistical data in tabular or graphical form, were not able to attend conventional short courses at Schools of Librarianship because of geographic, economic or social reasons.

d) The advent of PRESTEL and other video-tex services means that librarians and information workers are having to prepare material for input to, and interpret the outcome from, the system.

4.0 The Development of the Course

METHODOLOGY

The content and format of packages for Distance Learning purposes vary considerably from that of a text book, as does the form of assessment of the student's understanding. In essence this project involved an analysis of how a conventional curriculum can be developed into a new format which will be effective for Distance Learning. This implies the following steps.

a) Devising a curriculum for a viable course
b) Expanding and re-writing explanatory material
c) Developing examples for self-assessment
d) Compiling packages with the help of a word processor
e) Administering the course on a pilot-basis
f) Evaluating the pilot course and modifying packages in the light of the evaluation.
g) Determining the market for the course
h) Administering the full-scale course
i) Analysing the evaluative comments of students
j) Completion of a report of the research

4.1 Proposed Time-table

The time-scale for the project was:-

OCT - DEC 1982 - Preparation of curriculum and content of package. Recruitment of pilot volunteers

JAN - APR 1983 - Administration of Pilot Course

APR - AUG 1983 - Pilot course evaluated, packages edited, students recruited.

SEPT - DEC 1983 - Administration of full-scale course

JAN - MAR 1984 - Evaluation of full-scale course and preparation of report.

Apart from delay in the presentation of the final report, this time-scale has been adhered to, frequently with difficulty. The PICKUP grant for the services of the research worker was granted in September 1982 but by the time contracts were exchanged between F.E.U. and the Polytechnic, and the post advertised, we could not appoint before January 1st. Whilst this was anticipated it meant that the pilot course was already in written form and its students recruited before the research worker was in post.

4.2 The Pilot Course

A 13 week course, involving 9 separate teaching units (A-I), each consisting of descriptive explanation, interspersed with model exercises (with answers) and additional self-marked exercises was planned. It was anticipated that the student would spend between 4 and 5 hours per week on the course. Each unit was evaluated closely (see Appendix B) and the students were sent an overall evaluation document (see Appendix C) approximately one fortnight after the course had been completed. At the beginning of the course we asked the volunteers to fill in a student profile (see Appendix D, Iterim Report).

There were 3 tutor-marked tests, an assignment and end of course assessment. Marks on the two latter determined a pass. Contact with the student was to be by post and telephone.

4.3 Recruitment for the Pilot Course

Recruitment took place entirely by personal contact at conferences, seminars and amongst personal acquaintances. We were able to offer our volunteers a free course in return for their services in evaluation. A Polytechnic Transcript was awarded on successful completion of the course. At the outset this appeared agreeable to all parties

but we subsequently found that some students did not always return the evaluation sheets, hence the variable numbers appearing in the results (see Appendix D - Interim Report). This problem of non-return of evaluation documents became more acute with the September course and was one reason for the late production of this report. Course planners should be aware that despite letters, phone calls and persuasion, evaluation techniques came to nought if the student chooses not to return the form, despite stamped addressed envelopes. The geographic spread of the students was national (p.5 see app. D) a trend which has continued, even becoming international by January 1983.

4.4 Running of the Pilot Course

Whilst the course content was totally written by November 1982 the forward planning did not go as well as hoped. The time needed to produce perfect copy surprised all of us. Even then some minor errors still appeared in the text. The greatest problem, however, was graphic production. The nature of the subject demanded many charts, graphs and tables. These took the Graphic Design Unit longer than we had anticipated, so that the course ran from January 1983 onwards with production of the units only one week ahead of post-out date. In the middle of the course, a particularly complicated unit in graphical terms (Unit G) was very late and the students received this one week after the expected time. This had a knock-on effect on dates for submission at the end of the course and is reflected in the student comments on postal arrangements. We cannot stress, too strongly that future course developers should be aware of production time. These problems may appear to be particular to the institution rather than the general development of distance learning but are included here because of the lessons to be learned. Problems of production are inherent in institutions which have many calls upon

their professionals' time. We would not recommend any planning whereby all the materials were not in their completed form before the course begins.

4.5 Results of the Pilot Course

We were very encouraged by the student's evaluation of the course (see Appendix D). Particularly were we surprised that our 'educated guess' that the students would need to spend 4 to 5 hours per week on the work proved correct. However, this was the average time, the spread between the students being broad. We realised that with a truly mixed ability group, this wide disparity was to be expected. This, in fact, points to one advantage of distance learning in that the student really is able to study at their own pace compared with set lecture times.

4.6 Re-Writing

The use of evaluation sheets with every unit allowed the students to tell us many specific editorial points which we had missed and to identify areas of confusion. There were individual differences in reaction to the materials but two broad areas of weakness emerged.

a) Use of computer printout

The students felt that we had not explained fully how they were to use these. This fair criticism was met by producing a Computer Pack, separate from the units. This pack contains the relevant instructions and print-out. which has the advantage of allowing us to up-date the computer element as this subject area develops and changes. We wondered if we should expect the students to use their own computers or expect them to have access

to one at their place of work but decided against it. This decision was proved correct as the subsequent survey on this point (see Appendix E p.3) showed that very few students would have been able to do this.

b) The teaching of semi-logarithmic graphs

This part of Unit H was completely re-written and expanded. The September course students seemed to find the re-write sufficiently explanatory. We decided to devise our own semi-log graph paper rather than supply the commercial variety. This was because we thought that the detailed structure of commercial semi-log graph paper was very off-putting, particularly when we stressed that the course was suitable for students with no previous knowledge of statistics. Only a basic understanding of simple arithmetic procedures was assumed. However, this home-produced log paper was noted by one student in the September group as being "shoddy". (see Appendix D p.7) We decided that it is better to have one student commenting on "shoddiness" than others commenting that the subject is too difficult. The perfect compromise would be to produce our own non-shoddy semi-log paper.

4.7 Book list

Our view of an effective educational experience is that it must be one which encourages the student to read further and develop the subject area more widely according to individual needs and interests. We believed that our target group of librarians and information workers would particularly be wanting references for further study so that the original book list for the pilot study was assembled with some trepidation for such a demanding audience. Therefore, the use of the

reading list, as noted in Appendix D p.21, was surprising. The majority of the students did not wish to read from the list or read more widely but rather more expressed a wish to be directed to specific readings. After many discussions and bibliographic searching, a decision was reached to compromise with an annotated bibliography rather than be prescriptive as to further readings. The September cohort appear to be reasonably satisfied with this (see Appendix E p. 7/8).

4.8 Course Content

As the evaluations of the pilot course did not reveal any major flaws in the original course design other than those noted above, it was decided to keep to the curriculum design of

a) nine teaching units, one being posted out each week
b) three weeks when a tutor marked test is to be submitted
c) 2 assessed pieces of work viz: the assignment and the end of course assessment. The outline of the course is shown in Appendix A.

The aims of the course were to remain:-
To enable the sudent to acquire the ability to:

1) Decide how to present any set of data to best advantage in order to convey information clearly and accurately.

2) Present information so as to attract the attention and interest of the reader.

3) Understand more readily the data presented in documents that you read or machine based services that you use.

4.9 Tutor marked tests

These tests do not form part of the Assessment for the Course but provide opportunities to submit work to the Course Tutor for scrutiny, comment and a guide to work. In fact some students chose not to submit these tests, presumably either because they were already confident of progress or else short of time. Only one person in the September cohort was not satisfied on the use of these tests to mark progress, (see Appendix D, p. 6). It is interesting that this person compared us unfavourably with the Open University. This point is worth noting for course developers as distance learning material will now always be compared with the very high standards set by the Open University.

Another point to note on submission of optional tests is that those students who did not submit the tests sometimes later regretted this fact when the compulsory submissions were due. Adult part-time learners need to be allowed options in how they choose to study a course, therefore this degree of variance is to be expected.

4.10 Recruitment to September Course

A small leaflet was devised to advertise the course. This was widely praised as being very eye-catching as it was black printed on daffodil yellow. Initially these leaflets were distributed via a mail-out form which placed them in every public and academic library. This mail-out system proved not to be successful, however, and will not be tried again. We presume that the mail-slot was buried amongst all the other in-coming advertising . Much more successful in recruiting were advertisements and articles placed in professional journals. The Library Association Record proved particularly fertile ground for

recruiting public and academic librarians. Our September 83 course of 25 places was filled by the end of July 83. The New Scientist, although a very expensive journal in which to advertise, has introduced awareness of our course to a previously un-tapped group, that is the industrial librarian and information worker.

Currently we have enrolled many of these specialist librarians and information workers for our next, September 84 course.

4.11 Enrolment

One minor administrative problem was that conventional Polytechnic systems assume the physical presence of the student to sign an enrolment form in the presence of a lecturer/administrator. Obviously this is not possible for distance learning students. A new form had to be devised to overcome this and as part of the new system the Polytechnic felt it necessary to insist that the £40 fee be paid before being enrolled as a student, instead of the usual practice of sending the bill after the course has begun. We had grave doubts as to whether this would be sufficiently attractive to potential students and particularly to any funding authorities but it has proved no problem at all. In fact, one of the better developments of this project has been this administrative system whereby the receipt for the £40 can usually very quickly be returned to the student from the Finance Office.

4.12 Cost and Fees

One major problem of the development of this course was deciding upon the fee to the student. Many hours of discussion centred on such points as:-

- should marginal costing be applied?
- how should overheads be distributed?
- how are costs to be measured - e.g. staff planning time?
  marking time?
  lecturing time?

These decisions have an effect on time-table remissions and conditions of staff service. The problem was particularly acute for courses which fall within the non-advanced category and which are below the 4 weeks/60 hour limit. (N.B. This course lasts for 57 hours). The general principle is that such courses should be costed on a full cost recovery basis. The problem is compounded (both from the point of view of costing and in respect of deciding which side of the 4 weeks/60 hours band such a course falls), by the fact that the prime determinant of level and fees in respect of conventional courses is the number of hours or sessions of class contact: the very situations which do not occur with open learning/distance learning systems.

4.13 It became clear that existing costing models could not be applied to this course so the Polytechnic administrators, after many hours of consultation, devised the following model. They are not entirely happy that this is the definite approach to costing future distance learning courses but time was pressing and a course fee decision was essential.

4.14 The costing was based upon the following assumptions.

a) That the basis of the fee shall be an estimation of total staff hours for the course which includes reference to development costs

b) That other costs should be taken account of, in the spirit of the full cost model, but that these should also reflect the number of courses to which such costs should relate.

4.15 Staff Costs

It was estimated that one hour of staff "contact" time per week would be necessary to mark work/communicate with each student. At the end current short course rate, this was costed at £12 per student.

It was calculated that a total of 320 hours of academic staff time had been devoted to developing the course. At £12 per hour, this totals £3,840. However, this cost could not be ascribed solely to the first course as the course can be repeated, but to the number of courses/students for which the package can be used before redevelopment becomes necessary. In this case it was estimated that the material can be used for 10 courses or 250 students.

Consequently the cost per student was calculated at £15.36p per student.

4.16 Production Costs

The cost of producing the student packages was estimated at £12 taking into account supplies, machinery, labour, graphics, materials spread as above 10 courses or 250 students.

4.17 Fee to Student

On this basis the proposed fee for the course was £40. There has been no evidence to date that potential students do not consider this a fair or even very good bargain. This compares favourably with Open University courses and other commercial enterprises.

4.18 Profit from Fees

Whilst we are delighted at being able to charge an attractive fee for the distance learning course, unfortunately we are not allowed to keep any profits. All short courses must be self-financing, i.e. pay for own postage, advertising and production of materials but any profits made accrue to the L.E.A., not the Polytechnic. At present there is no way that this profit can be returned to the course team either in cash or hardware to help develop other courses. Therefore this administrative procedure, which, with the exception of a few L.E.A.s, is a national ruling, is a serious disincentive to further course developments. Even in a perfect world, entrepreneurial initiatives depend on some small profit motive. We understand that this policy is presently under review.

4.19 Student personal profiles

The data collected from the pilot and September groups follow, September course in brackets.

1. NAME: _____

Please tick the appropriate box	Male	12	(15)
	Female	16	(10)

2. Present Position	Not working	1	(0)
	Chief Librarian	1	(2)
	Deputy Librarian	3	(2)
	Area Librarian	1	(2)
	District Librarian	0	(2)
	Branch Librarian	3	(1)
	Subject Librarian	3	(1)
	Assistant Librarian	6	(3)
	Any other (please state below)	10	(12)

3. Type of Library or Institution

Public	19	(16)
Academic H.E.	4	(7)
Academic F.E.	0	(2)
Academic Schools	0	-
Special	1	-
Any other (please state below)	4	-

4. Years in experience in library/information work

None	2	(1)
0 - 5	8	(3)
5 - 10	6	(6)
10 - 20	10	(11)
More than 20	2	(4)

5. Qualifications

B.A.

B.Sc.

P.G.D.L.

P.G.C.E.

B.A. Librarianship

B.Sc. Information Studies

B.Sc. Librarianship

M.A.

M.Sc.

Ph.D.

A.L.A.

F.L.A.

Other (please state below)

6. Reasons for doing this course

For personal interest or development	24	(18)
To help School of Library Studies	17	(1)
To aid promotion prospects	4	(6)
To help with a specific job problem	4	(6)
To re-train	1	(0)
Other (please state below)	1	(3)

7. Previous knowledge of Presentations Statistical Data

None	13	(12)
Part of initial training	1	(3)
Part of in-service training	2	(0)
Studied privately for own development	3	(2)
Other (please state below)	9	(6)

8. Previous Experience of Distance Learning Courses

None	21	(12)
Open University	4	(7)
Correspondence College	3	(8)
Other (please state below)	1	(1)

9. Experience of Teaching

None	22	(18)
Primary	2	(0)
Secondary	3	(0)
Tertiary	3	(7)

4.20 **Student Completion Rate**

a) Pilot Course

28 students were recruited for this course. This was 3 more than the optimum number of 25. In effect, 18 completed the course, submitted the required work and were awarded a Polytechnic Transcript. Of the remaining 10,8 withdrew during the course for various reasons (see Appendix D, p. 14). It was noticed that the group which had between 10-20 years experience were the most vulnerable to withdrawing.

b) September Course

25 students were recruited for the course, 16 completed the course, submitted the required work and were awarded a Polytechnic Certificate. Of the remaining 9, 4 did not submit any work or communicate in any way/ described in the following table as "not known".

Table of Withdrawals

Sex	Years of Experience	Qualifications	Research for Withdrawal.
F	20+	B.A., F.L.A. Cert. Ed.	not known
F	10-20	A.L.A.	not known
F	10-20	B.A. A.L.A. P.G.D.L.	short staffed at work.
F	5-10	B.A. A.L.A.	got behind.
M	20+	A.L.A.	not known.
M	10-20	A.L.A.	wife's illness.
F	20+	A.L.A.	new job.
M	10-20	A.L.A.	not known.
F	10-20	M.A. A.L.A.	parents illness.

The small size of group does not allow any conclusions to be drawn as to the vunerability of certain groups. It appears that those with

10-20 years experience are most at risk but these are the biggest group any way, 11 out of 25. The course is aimed at middle management which would mean the students will tend to be drawn from those having between ten and twenty years experience.

This completion rate, though not as good as we would wish is still better than many adult education courses. We increasingly think that there are two basic reasons for non-completion.

a) Genuine pressure of work, or home, or illness.

This is only to be expected in any group of adults attempting a part-time course in addition to a demanding job at a time of life when there are many immediate pressures from just being at the middle-management stage.

Within this group we would also group those perhaps who became bored with the course and used another excuse to explain non-completion. This point will be returned to when discussing expectations of the course.

b) We have no real evidence to confirm this but we suspect that those who did not complete the course, submit texts or communicate any reason, really only wanted the materials to work through in their own time, without wishing at all for certification. The high number who noted reasons for doing the course as "own development", see above, surprised us. It may be that they chose to pay the £40 fee just to acquire the units for their own or others' staff development. This seems to us a perfectly acceptable use of the course but it raises a further question, which will be developed later, as to whether many potential students would have prefered to buy these teaching materials without tutor-contact or certification. The evaluation documents asked this specific question(see P.3. Appendix E) and only

2 students stated that they would have preferred a learning package, but then the students who did not complete the course and whom we suspected only wanted the materials did not return the final evaluation sheets. This may seem a somewhat tenuous hypothesis but we have received many letters of enquiry from libraries wishing to buy the materials as a package without needing to register their staff on the course. At the moment we have not prepared the material this way and there is no way around the Polytechnic fee of £40 which assumes tutoring costs. However, what individuals chose to do with the materials after the £40 has been paid is not under our control (except if copyright is contravened).

4.21 Title of the Course

It was noted above that the course did not always meet the students expectation s in terms of content (see Appendix E, P.1. and P.5.) Some students clearly expected more on mathematical concepts than the <u>present-ation</u> of data. With hindsight we wondered if this was caused by the title of the course,

"Statistics for Librarians - Presentation of Data".

It was phrased this way because we thought that "Presentation of Data" would be the first of a number of short courses on statistics but now realise that the word "statistics" coming first in word order, may conjure up a whole list of expectations, chi-squares and all, which appear to go with the usual perception of the word statistics. We have examined our advertising leaflets and are satisfied that in fact they correctly explain the course content but the damage seems to be done by word order. A better title would have been:

"The Presentation of Statistical Data for Librarians."

This may seem an incredible point to be dwelling upon but perhaps other course developers can profit by our mistake.

4.22 Telephone and Postal Arrangements

Both the pilot group and the September course were on the whole satisfied with the postal and telephone arrangements. (See Appendix D. P.25, Appendix E. P.4.) We were pleased and not a little surprised at this result. The costing of the course allowed us to send all correspondence by first-class post - an extra expenditure which is well worth-while. We found that the students did not correspond very much with us. When the course was being designed we wondered whether it would be necessary to invest in an Ansaphone service. However, there is no evidence that this expense is necessary, given the few telephone calls which have been made to us. From our point of view it frequently proved very difficult to contact the students by telephone. We had a list of their work and home numbers but even so usually resorted to leaving messages. Those students whom we were able to speak to at the beginning of the course expressed pleasure at now being able to "put a voice to a name". This personal contact appears to be very important and it is one aspect which we intend to develop as fully as possible in the future. Counselling before enrolment would seem to be one avenue which we should explore further. This would obviate any confusions about course content, noted above.

4.23 Evaluation Technique

It was explained earlier that each unit of the pilot course was evaluated separately, (see Appendix B) and the final evaluation of the whole course was sent out after both the pilot and September course. The data thus generated was collated and compared with the students personal profiles/noted earlier/. No specific trend or predictable pattern emerged from these small numbers, made even smaller by the none return of forms or incomplete submissions. We cannot say

for instance whether the group most likely to respond most positively to a distance learning course of this kind will tend to be one particular sex, what sort of academic background they will be likely to have, or how long or where they will have worked. A much larger and longer survey will be needed for these sort of results to emerge. Nevertheless we did find that the questionnaire approach did reveal a great deal about the students' varying perceptions of the course and its effectiveness. With hindsight we now think that this evaluation strategy, although valuable, should have been supplemented with personal interviews/case histories. This was not done for many reasons, the main one being that no money was available to visit our widely dispersed students. In future perhaps this could be counted into development costs. Certainly we now realise that the absence of individual interviews is a weakness in this report.

4.24 The value of piloting

Being able to test the learning package upon the pilot cohort proved quite invaluable. We were incredibly lucky in being able to recruit for the pilot testing a replica of the eventual target group. No other form of piloting could have been as reliable and we would recommend future course developers to take both care and time over the selection of the pilot cohort. It is very tempting to seek the opinions of colleagues or students on traditional taught courses, who are comparatively captive audiences, but they are not typical of the distance learner, who usually works on the materials alone and after a days work.

4.25 Production

The pilot course was developed on a word-processor but in the interests of quality production it was decided to produce the

September course by type-set, we would not do this again. We do not think that the difference in quality of print, if any, compensates for the fact that after type-setting all of the proof-reading must be done again. This accounts for some of the September students comments on errors in the text.

5.0 Summary of Project Findings

The evaluation of both the pilot and the September course has encouraged us to think that distance learning IS a feasible method of up-dating the skills of middle-management librarians and information workers. Recruitment for future courses is preceding and we are confident that there will be a market for this course for some time to come. The previously unreachable student has been reached. This is particularly gratifying to us because whilst our catchment area for conventional courses is already geographically extensive, as Newcastle Polytechnic is the only library school between Leeds and Strathclyde, we have in fact recruited, distance-learning students from the Shetlands to the South Coast. The January 1984 course included a student from Hong Kong and we currently have had enquiries from Singapore, India, Kenya, Holland and Belgium.

5.1 Time

The development of distance learning materials, whilst effective and rewarding, is costly of previous resources such as staff-time and effort. In fact it is difficult to be accurate about the hours needed for development. Is it only writing time or does it include all the hours spent thinking about problems, e.g. in a car or in a bath? No matter what approach is taken all future developers should be prepared to allow much more time than they originally imagine that they will need. On the other hand we recognise that any future courses we prepare will not need so much planning time, or so we imagine now.

5.2 Market Research

Because development is so expensive, the identification of market need is therefore crucial. We consider that this, in fact, has been one of our weaknesses. This has manifested itself in two ways.

a) The choice of subject, "Statistics for Librarians-Presentation of Data" was decided upon by academic judgement as described earlier. In the event, it seems to have been a good choice but it is not clear what the priorities for other courses on re-training should be if we decide to write more. Market research whereby the potential students and their employers are asked to define re-training needs if necessary.

b) We increasingly wonder if a taught, tutor marked course, with time limited to 13 weeks and assignments for set dates in order to gain a Polytechnic Certificate is necessarily the most effective format to have maximum effect on the potential market. Because of the inquiries, explained earlier, we do not know whether an open-learning package will reach more potential students than a tutor-guided course. At the moment it seems that all we can reasonably say is that the short course we have produced is successful with those students who chose to do it. It may be that the same content, with some modifications in format which would make it a completely free-standing package, would be even more effective, in terms of the numbers using it.
The ideal situation may be to produce the materials in 2 formats and the potential student counselled as to which would suit his/her particular needs, learning style and availability of time.
At the beginning of planning we identified the total potential market for this course as being between 7000-9000, so far only about 150 have enquired about the course.

5.3 Costing

We eventually derived a fee which is favourable to recruitment but regret the absence of national or regional guidelines on the costing of distance learning courses. We hope that a policy can be devised and nationally adopted whereby profits from one enterprise

can be used to fund the next.

5.4 In-House Production

We are proud of the fact that the course was produced from beginning to end entirely by the resources of Newcastle Polytechnic. However, modern students compare all materials with the sophisticated products of the Open University in both quality and content. The time involved in achieving perfect copy surprised us. The students were much better at proof-reading than we clearly were and were irritated by any errors remaining. We do not recommend changing from word-processing to type-setting.

5.5 Student Access to Computers

We were surprised at how few students had access to a computer terminal. We were able to overcome this difficulty by producing a computer pack but mention it here because it casts doubt on the possibilities of teaching some aspects of information technology/management. It is easy to assume that the way to teach information technology is with information technology, but this is dependent upon access to and compatibility of equipment.

5.6 Recruitment

This was most effective via advertisements in professional journals, not mail-slots.

5.7 Title

Choice of title is critical to students expectations of the course.

5.8 Contact with Students.

It is well worth paying extra for 1st class post. We are satisfied that for a course of this length post and telephone contact between college and student is on the whole sufficient. We would have severe doubts as to whether this would remain feasible with a course of any

greater length.

One development we would wish to try, if possible, would be a day-school near the end of the course. Totally distance learning in the format of the present course does not suit everyone and counselling on learning styles is necessary. However, one Newcastle based student told us that she only wanted to do this course on the understanding that she never had to have contact with either her tutor or other students. It was the idea of studying in isolation which appealed to her.

5.9 Student Submission Dates

Despite being informed at the outset when assessed work must be submitted, several students asked for extension of time. This may suggest that the course is not "open" enough in that just as individual students work at differing rates, so individuals need differing times to satisfactorily submit work. Alternatively it may be that no matter how much time they have, some people are always tardy. We think this whole area of submission of course work needs further research so that the learning process can be most effective and pleasurable. The assumption that students wish to gain certificates may also be questionable, particularly if they are only doing a course for their own interest. This then brings into doubt the term "drop-out rate". Has a student "dropped out" if they chose to not do course assessed work but continue to use the materials?

6.0 Further Developments

Dissemination of the Project

In applying to the F.E.U. for the PICKUP grant which supported this project we stated that expertise gained in this project would be shared with other schools in the Polytechnic who may be interested in developing open learning, as well as being the basis for further packages produced by the School of Librarianship and Information Studies. We also outlined the ways in which this project could be relevant to other parts of the FE/HE system. The following papers and publication have already arisen from this project. It is hoped that more will follow.

BLACKIE, Edna "Open learning for Librarians".
Northern Librarian (27) October, 1982

BLACKIE, Edna and SIMPSON, Ian S "The development of a distance learning course".
Bulletin of Educational Development and Research (25) Spring, 1983.

BLACKIE, Edna and SIMPSON, Ian S "Implementing PICKUP", Paper delivered at SCEDSIP Conference, Wolverhampton Nov. 1982.

BLACKIE, Edna "Innovations in teaching and Learning". Paper delivered at Newcastle Polytechnic staff seminar, June 1983.

BLACKIE, Edna "The education of school librarians". Paper delivered at National Conference of School Library Group, Newcastle University, April 1984.

BLACKIE, Edna "Developing a distance learning course". Paper given at National Conference of Occupational Therapists, Newcastle Polytechnic, Feb. 1984.

BLACKIE, Edna "Open learning package or distance learning course?" Paper given at SCEDSIP Conference, Kingston Polytechnic, May, 1984.

BLACKIE, Edna — Joint tutor on Newcastle Polytechnic staff training workshop on "The design and production of independent learning materials", to be held July and September, 1984.

BLACKIE, Edna — "The implications of developing distance learning". Paper to be given to British Library/ABLISS Joint Seminar Sept. 1984.

6.1 Collaboration

Other Schools of Librarianship have expressed an interest in future collaboration in joint projects. At the moment, this remains as expressed interest, no firm plans have been made. Two colleges of F.E. have been asked about the possibility of running the course themselves.

6.2 Potential students

The advertising leaflet for the course states that we expect the course will appeal to:

a) Middle management librarians whose professional training did not include statistics.

b) Other librarians who wish to up-date their skills.

c) Those not at present in employment who wish to add to their qualifications.

d) Non-librarians who wish to understand and present data effectively.

6.3 We are confident that we have reached groups (a) and (b). At the moment we have not really attracted group (c) largely because perhaps those not at present in employment (perhaps because of maternal duties) may not be reading the professional journals. The group which we have not attracted at all and which we suspect is the largest market, is group (d).

Discussion with colleagues both within Newcastle Polytechnic and

outside colleges of H.E. and F.E. have led to many enquiries as to whether we would consider adapting the course to areas and disciplines other than librarianship and information work. This would involve re-writing the materials so that the specific librarianship examples were exchanged for those of more general interest - e.g, consumer buying, income, car sales, health statistics. There is a potential demand for such a package since:

(i) research methodology and information need are of growing importance in many disciplines.

(ii) new technology is making the graphic display of data in many subject areas more commonplace.

6.4 Even within the confidence expressed above that the course has reached certain target groups, we still do not know whether the most effective, form of learning has been devised. Is a distance, tutored short course more effective in re-training than an open-learning package? Is it even necessary that the materials should be subject-specific? e.g. would a course entitled, "Presentation of statistical data for Accountants" be necessarily more effective used with accountants than a general course "Presentation of Statistical Data"? More market research is necessary. It may be that a checklist of criteria can be devised for future course developers which would enable them to more accurately gauge, given the characteristics specific to their target groups needs, geographic location, etc., which of two formats would be better.

6.5 Conclusion

We think that this project has shown that it is possible to effectively develop a distance-learning course to teach the skills of presentation of data to librarians and information workers. We also think that the possible developments from this are multiple, expanding

both within librarianship and across many other disciplines.

We have established a model within the Polytechnic whereby a 13 week, part-time course, taught by distance learning methods can be costed validated and certificated internally. Other subject areas can fit within this structure. We could develop our basic ideas further so that perhaps 4 such short courses could build into a diploma in the future. Expansion is dependent upon both the enthusiasm of academics to develop materials and upon interested bodies to give financial support to ensure that materials are professionally produced and market surveys can reliably identify markets and preferred learning styles.

E. Blackie
Project Leader
June 1984.

Summary of the Project R.P. 121 Pickup.

Aim

To develop a distance-learning curriculum package teaching the skills of presenting, analysing and evaluating statistical information to librarians and information workers.

The report outlines the background to the development, explains the methodology of the research, considers the implications of the results and suggest recommendations for future course developers, writers, funding bodies and administrators.

The decision to develop distance learning arose because of the increasing problems of librarians in obtaining time off work to attend the Polytechnic either for short courses or the part-time B.A. It was thought that distance learning, if successful could overcome many of the problems arising for the re-training of librarians during a time of increasing economic stringency and fast changing technology.

The project was awarded a PICKUP grant to pay for the services of a research worker to help develop and evaluate the course which lasts for 13 weeks, is part-time, and involves the students in 4 or 5 hours work per week. Piloting of the project was done with 28 volunteers between January and March 1983. The evaluation of these students both of each separate unit and the course as a whole was closely monitored. The course was re-edited and students recruited for September 1983. The Students live in all over the country, Shetlands to the South Coast and even one is in Hong Kong. This is possible because contact is entirely by post or telephone.

The report of the project explains the administrative problems which had to be overcome so that the Polytechnic now has the potential of a 13 week, 57 hour distance learning course for which a certificate can be awarded on successful completion. Other subjects can be developed to suit this structure.

The problems encountered include recruitment, enrolment and costing of the course.

The methods used for developing the materials are explained together with recommendations to future course planners.

Some questions remain unanswered even after the project, particularly that of how to effectively assess the market demand and need. The future funding of further developments is also questioned.

STATISTICS FOR LIBRARIANS
PRESENTATION OF DATA

OUTLINE OF COURSE

WEEK	UNIT	TOPICS
1	Introduction	Why study Statistics? Aims of the course. Notes for students.
	A	Variables and their observation; qualitative and quantitative data; data collection.
2	B	Qualitative data I Tables of data; order of data within the table; approximations; percentage values.
3	C	Qualitative data II Pictograms; comparative pictograms; simple bar charts; simple column charts.
4	D	Qualitative data III Component bar and column charts; 100% bar and column charts; grouped bar and column charts; pie charts.
5		**Test on Qualitative Data.**
6	E	Quantitative data I Arrays; frequency tables; histograms; frequency polygons.
7	F	Quantitative data II Relative frequency tables and histograms; cumulative frequency tables and graphs.
8	G	Quantitative data III Grouped frequency tables, histograms and polygons; cumulative frequency tables and graphs for grouped data.
9		**Test on Quantitative Data.**
10	H	Qualitative/Quantitative data Line graphs, surface graphs, semi-logarithmic graphs.
11	I	Quantitative/Quantitative data Tables of raw data; correlation tables; scatter diagrams.
12		**Test on Mixed Data.**
13		**End of course assessment.**

APPENDIX B

EVALUATION of individual units

Please complete the questionnaire below and return it with the tutor-marked tests.

1. How long did it take you to complete this unit? ☐

2. Did you complete all of the activities in the unit? YES ☐ NO ☐

3. If your answer above was "NO", please state why.

4. Did you find this unit -
   - Very easy ☐
   - Fairly easy ☐
   - Just right ☐
   - Fairly difficult ☐
   - Very difficult ☐

5. How interesting did you find this unit?
   - Very boring ☐
   - Boring ☐
   - Variable ☐
   - Interesting ☐
   - Very interesting ☐

6. In the context of your work, how useful do you consider this unit to be?
   - Completely useless ☐
   - Fairly useless ☐
   - Fairly useful ☐
   - Very useful ☐

7. Please refer to the objectives at the front of the unit and tick those which you consider you have achieved.
   - 1 ☐
   - 2 ☐
   - 3 ☐
   - 4 ☐
   - 5 ☐
   - 6 ☐
   - 7 ☐

continued ...

8. How much of the subject matter within this unit was already known to you?

None	☐
Approx. $\frac{1}{4}$	☐
Approx. $\frac{1}{2}$	☐
Approx. $\frac{3}{4}$	☐
All	☐

9. Did you wish to telephone your tutor when you were working through the unit about any matter.

YES	☐
NO	☐

10. If your answer was 'yes' were you able to contact your tutor?

YES	☐
NO	☐

11. If you were unable to contact your tutor, please give the reason:

12. Please use the appropriate number 1 - 6 as explained below when answering the next group of questions.

1	2	3	4	5	6
not at all	very little	a small amount	quite a bit	a lot	a great deal

When you were studying this unit to what extent did you:

1. ... try to link the different concepts together? ____

2. ... examine the evidence carefully before accepting a conclusion? ____

3. ... learn definitions, rules, and methods which you would be able to apply? ____

4. ... concentrate on trying to remember as much information as possible? ____

5. ... look for the principal ideas in what you were studying? ____

7. ... learn off-by-heart the material you were studying? ____

13. When you were studying this unit to what extent did you examine the descriptive matter carefully before attempting the exercises. (Please use numbers 1 - 6 as above). ____

continued ...

14. After completing the unit did you feel you wanted to:

	YES	NO
Obtain further information		
Telephone your tutor		
Write to your tutor		
Read from reading list		
Be directed to specific readings on reading list		
Read wider than the reading list		

15. Please add below any extra comments on the unit or this evaluation sheet which you wish to make.

STATISTICS FOR LIBRARIANS

Presentation of data

Final Evaluation of the Pilot Course

April 1983

Lipman Building
Newcastle upon Tyne Polytechnic
Newcastle upon Tyne
NE1 8ST

Tel. 0632 612181

SECTION A COURSE EFFECTIVENESS

1) The aims of this course were to help you to acquire the ability to:

a) Decide how to present any set of data to best advantage in order to convey information clearly and accurately.
b) Present information so as to attract the attention and interest of the reader.
c) Understand more readily the data presented in documents that you read or machine based sources that you use.

Please tick the appropriate box to show which of these aims you have achieved.

	yes	no
a		
b		
c		

2) Did this course meet your expectation?

yes	
no	

If your answer was 'no' please state below why.

;) Was our estimate of the average time to be spent per week (4/5 hours) correct?

yes	
no	

: your answer was 'no' please state below why.

4) Please tick in the accompanying box if you found the course useful in terms of

a) career needs

b) personal interest

c) specific job problems

	yes	no
a		
b		
c		

5) Please indicate below at what career stage you think someone would most usefully benefit from this course.

6) Would you have preferred to have these units as a complete study package without the tutor contact, marking and assessment?

yes	
no	

Please explain why.

7) Would it have been feasible for you to have used a computer to generate tables or graphs?

yes	
no	

If 'yes' please state what computer and software would have been available.

8) If it had been possible, would you have liked face to face contact with your tutor?

yes	
no	

If 'yes' please say how often.

10) Would you like to do other distance learning courses?

	yes	no
a) in statistics		
b) in other fields of librarianship		
c) other courses outside librarianship		

Please say which areas of librarianship would interest you.

SECTION B COURSE ADMINISTRATION

11) Were you satisfied with the postal arrangements for the course?

yes	
no	

If 'no' please state why.

12) Were you satisfied with the telephone arrangements for the course?

yes	
no	

If 'no' please state why.

13) Would you have preferred more flexibility in receipt of the units e.g. all the units delivered together at the beginning of the course or in three separate blocks?

yes	
no	

If 'yes' please explain why.

SECTION C COURSE CONTENT

14) Would you have liked more or less detailed explanations to be included in the text?

more	
the same	
less	

15) Would you have liked more or less subject matter to have been included?

more	
the same	
less	

If the answer was 'more' please list what you would have liked to be included if possible.

16) Would you have preferred more or less worked examples in the text?

more	
the same	
less	

17) Would you have preferred more or less self marked exercises?

more	
the same	
less	

18) Do you think that the three tutor-marked tests gave you sufficient information on your progress?

yes	
no	

If 'no' what would you have preferred?

18a) If you did not submit the optional tests, what were your reasons?

a) Not enough time

yes	
no	

b) Did not feel the need

yes	
no	

c) Other reasons

19) Did you consider the subject matter of the questions and examples appropriate?

yes	
no	

SECTION D COURSE FORMAT

20) Were you satisfied with the general quality of production?

yes	
no	

If 'no' please state why.

21) Would you have preferred specific references to further reading to be incorporated into the text?

yes	
no	

22) Would you have preferred a wider reading list?

yes	
no	

23) Did you acquire a copy of any of the books for further study given in the introduction?

yes	
no	

If 'yes' please list the titles.

24) Did you use any other books or articles?

yes	
no	

If 'yes' please list the titles.

25) Would you have preferred a wider or narrower reading list?

wider	
the same	
narrower	

SECTION E ASSESSMENT

26) The assignment

Please make any comments you wish under the following headings:-

a) Time taken to complete

b) How relevant was the assignment to your needs?

c) Level of difficulty

d) The ease with which the required data could be collected

26) cont.

e) How interesting did you find the assignment?

f) Suggestions for any future assignments

g) At what point in the course should the assignment be selected and begun?

27) End of course assessment

Please make any comments you wish under the following headings:-

a) Time taken to complete

b) Level of difficulty

c) Usefulness in demonstrating the attainment of the student

d) Any other comments

APPENDIX D

INTERIM REPORT
TO F.E.U. ON

STATISTICS FOR LIBRARIANS
PRESENTATION OF DATA

R.P. 121 - PICKUP

JULY 1983

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NEWCASTLE UPON TYNE POLYTECHNIC

PROJECT LEADER - E. BLACKIE

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1. Aim of the Project

2. Abstract of the Research

3. Award of the PICKUP Grant

4. (i) The PILOT COURSE
   (ii) Recruitment for the Pilot Course
   (iii) The Pilot Study Students
   (iv) Student Completion Rate
   (v) Running of the Pilot Course

5. EVALUATION
   (i) Evaluation of Individual Units
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6. SEPTEMBER COURSE
   (i) Rewriting
   (ii) Recruitment

7. THE FUTURE

8. SUMMARY and CONCLUSIONS

Interim Report on Distance Learning Package

"STATISTICS FOR LIBRARIANS - PRESENTATION OF DATA"

R.P. 121 - PICKUP

June 1983

1. AIM OF THE PROJECT

To develop a distance-learning curriculum package teaching the skills of presenting, analysing and evaluating statistical information to librarians and information workers.

2. ABSTRACT of the RESEARCH

Research will involve the development of teaching material in a form suitable for distance learning purposes followed by testing the package on a pilot group and administering a full scale course. Both pilot and full scale course to be evaluated to assess the effectiveness of this form of teaching. Experience gained may be applied to future developments in other subject areas.

3. AWARD of PICKUP Grant

In September 1982 the project was awarded a PICKUP grant to support the services of a research worker for 15 months. Mrs. Stephanie Barber (MA, MSc) was appointed. By the time the

contracts were exchanged between F.E.U. and Polytechnic and the post advertised we could not appoint before January 1st 1983. Whilst this was anticipated in the original planning it meant that the pilot course was already in written form and recruitment had taken place before she was in post.

4. THE PILOT COURSE

(i) A 13 week course, involving 9 separate teaching units, 3 tests and an end of course assessment was planned. It was anticipated that the student would spend between 4 and 5 hours per week on the course. Each unit was to be evaluated separately (see Appendix B) and the students were sent an overall evaluation document approximately one fortnight after the course had been completed. (See Appendix C).

(ii) **Recruitment for the Pilot Course**

Recruitment took place entirely by personal contact at conferences, seminars and amongst personal acquaintances. We were able to offer our volunteers a free course in the presentation of data in return for their services in evaluating the course. A Polytechnic Transcript was to be awarded to mark the successful completion of the course. At the outset this appeared to be agreeable to all parties but we subsequently found that some did not always return the evaluation sheets, hence the variable numbers appearing in the results.

(iii) **The Pilot Study Students**

We were very pleased to have recruited from a wide geographic area - viz.

Newcastle	5
Preston	2
Carlisle	2
Nottingham	4
Bristol	2
Cleveland	3
Worksop	1
Darlington	3
Sunderland	1
London	2
Leighton Buzzard	1
Mansfield	1
Middlesbrough	1

At the beginning of the course we asked the volunteers to fill in a student profile, the results of which are set out below.

P E R S O N A L P R O F I L E

In order to help us evaluate your opinions of the pilot course, please fill in the document below and return with your application form.

1. NAME: _____

Please tick the appropriate box

Male	12
Female	16

2. Present Position

Not working	1
Chief Librarian	1
Deputy Librarian	3
Area Librarian	1
District Librarian	0
Branch Librarian	3
Subject Librarian	3
Assistant Librarian	6
Any other (please state below)	10

3. Type of Library or Institution

Public	19
Academic H.E.	4
Academic F.E.	0
Academic Schools	0
Special	1
Any other (please state below)	4

4. Years in experience in library/information work

None	2
0 - 5	8
5 - 10	6
10 - 20	10
More than 20	2

5. Qualifications

(Tick all that apply)

B.A.	12
B.Sc.	1
P.G.D.L.	7
P.G.C.E.	2
B.A. Librarianship	3
B.Sc. Information Studies	0
B.Sc. Librarianship	0
M.A.	2
M.Sc.	0
Ph.D.	0
A.L.A.	18
F.L.A.	1

6. Reasons for doing this course

For personal interest or development	24
To help School of Library Studies	17
To aid promotion prospects	4
To help with a specific job problem	4
To re-train	1
Other (please state below)	1

7. Previous knowledge of Presentations Statistical Data

None	13
Part of initial training	1
Part of in-service training	2
Studied privately for own development	3
Other (please state below)	9

8. Previous Experience of Distance Learning Courses

None	21
Open University	4
Correspondence College	3
Other (please state below)	1

9. **Experience of Teaching**

None	22
Primary	2
Secondary	3
Tertiary	3

We included 4 others who were not librarians specifically to compare their reactions with those of the larger group. This proved to have been a very useful move, particularly with regard to our intention of contributing expertise gained from this project to other subject areas. However, one side effect was that the question of usefulness for work was answered in the negative each time by one volunteer entirely because this person was working in another field.

The volunteers' reasons for taking the pilot course were possibly untypical of our eventual target group. Almost all were motivated by personal interest and to a lesser extent by a desire to help the School of Librarianship and Information Studies. Only a small minority said that their reasons were to aid promotion prospects, solve a specific job problem or retrain. We consider that this is probably the result of our methods of recruitment for the pilot course and will be surprised if this continued with the course proper. This point, interesting in itself, must also have had an effect on the group's answers to other questions such as interest, relevance and general motivation. Overleaf is a table in which one axis gives the student's reason for doing the course whilst the other axis sets out their perceptions of usefulness, difficulty and interest. In fact, the perceptions the student has of the course do not appear to have been linked with reasons for joining the

Reason	very easy	fair easy	just right	fair diff	very diff.	compl. usel.	fair usel.	fair use	very use	very boring	boring	variable	int-est	very int
pers int	5	16	25	19	0	6	19	39	2	1	2	20	40	3
help sch	0	7	6	3	0	5	0	11	0	0	0	4	8	4
retrain	0	0	1	2	0	0	0	2	1	0	0	1	2	0
other	0	5	1	3	0	0	0	8	1	0	2	5	2	0
p.i.+ aid prom	2	4	7	3	0	0	1	15	0	0	1	6	9	0
p.i. + job prom	1	4	6	2	0	0	1	12	0	0	2	10	1	0
p.i. + help s. + aid prom	0	0	8	1	0	0	0	9	0	0	0	2	7	0
p.i. + help s.	4	9	13	8	1	0	9	25	0	0	2	14	14	5

A comparison of student's reasons for doing the course, with their response to the usefulness, difficulty and interest level of the units

(It must be remembered that this table is a compilation of the students' responses over the 9 units, hence the high numbers.)

pilot study. The exception to this is the group with stated job problems found the Units useful for their work. We find this very encouraging.

At the outset of the Course, 13 students claimed that they had no knowledge of statistics yet the greatest number ever ticking this column in Question 8 of the evaluation sheet with each unit (see Appendix A) was 9 students. This may be because of some confusion about what the contents of the Course would be, or else it is a manifestation of natural modesty.

Subject matter already known.

Unit	None	Quarter	Half	Three Q.	All
A	6	4	4	5	2
B	1	6	3	8	4
C	4	6	4	8	-
D	3	11	3	2	2
E	6	4	3	2	4
F	8	4	5	-	2
G	9	5	-	-	2
H	6	4	5	2	-
I	5	3	4	3	1

No Knowledge

Years Experience	0	0-5	5-10	10-20	20+
	1	2	4	6	0

Qualification	Lib. Only	Acad. only	Acad. & Lib.
	6	1	6

Sex	Male	Female
	4	9

As we expected, the group claiming no knowledge of statistics tended to have qualified between 10-20 years ago. This is also the group, noted later, who are most likely to be under pressure at work and more liable to drop out of the course. We wondered if the higher numbers in the female group claiming no knowledge of statistics is more a social statement than the actual truth. Women traditionally imagine themselves "no good at maths" etc. In fact the females coped with the course quite as well as the men and also, fewer dropped out, as will be noted overleaf.

(iv) Student Completion Rate

28 students were recruited for the course. This was 3 more than the optimum number of 25 which will be the size of the September 1983 course. In effect 18 completed the course, submitted the required work and will be awarded a Polytechnic Transcript. Of the remaining 10, 8 withdrew during the course for various reasons (see below). The other 2 completed the course but did not submit all the required work.

TABLE OF WITHDRAWALS, IN ORDER OF DATE

Sex	Years Exp.	Qualification	Date of & Reason for Withdrawal
f	0-5	ALA	start (no reason given)
f	0-5	BA PGDL ALA	start (had not finished DMS dissertation)
m	20+	BA ALA	January (wanted validity tests, etc)
m	10-20	ALA	24.2.83 (very busy)
f	10-20	BA ALA	25.2.83 (serious illness)
m	10-20	ALA	2.3.83 (thought course too simple)
m	10-20	ALA	8.3.83 (very busy with own work)
m	10-20	BA ALA	25.3.83 (v. busy - another large project)
m	10-20	BA	March (sent all but assignment - busy)
f	none	BA PGDL	March (did all units)

This completion rate, whilst not as good as we would wish, is still better than many adult education courses. Again, it is interesting to speculate how typical the pilot group was of our eventual target group. Will the fact of paying £40 increase motivation? One problem which must be faced in developing courses for middle management is that of job pressure caused perhaps by staff absences, re-organisation and life changes. It is noticeable that the group who had 10-20 years experience were the most vulnerable students. These, the largest group, are by definition seeking promotion and/or more responsibilities. All these factors must make the finding of spare time impossible at what may be crucial points of the course.

It was because of an awareness of this that the question (Question 1 on the final evaluation, Appendix B) was asked to whether the students would have preferred more flexibility in receipt of the units. We were surprised by the replies.

QUESTION 1

"Would you have preferred more flexibility in receipt of the units e.g. all the units delivered together at the beginning of the course or in three separate blocks?"

Yes	4
No	15 (+2)

The following comments show the student's viewpoints on this. The first two comments illustrate majority opinion, the others the minority viewpoint.

"Deadlines (even if missed) concentrate the mind."

"Getting weekly units imposed a structure on the course. This is very necessary to maintain pace and self-discipline when working in this way."

"I wouldn't want everything all at once, but fewer, larger units, with relevant time to do the work may have helped as some units took less time than others. Receiving a unit which took longer in a busy week or when on holiday caused problems."

"Quite definitely I would have preferred to receive all the units together, because at the start of the course, when I had most time to devote to it, the units were particularly easy and took little time".

(v) Running of the Pilot Course

Whilst the course content was totally written by November 1982 the forward planning did not go as well as hoped. The time needed to produce perfect copy surprised all of us. Even then some minor errors still appeared in the text. The greatest problem, however, was graphic production. The nature of the subject demanded many charts, graphs and tables. These took the Graphic Design Unit longer than we had anticipated, so that the course ran from January 1983 onwards with production of the units only one week ahead of post-out date. In the middle of the course, a particularly complicated unit in graphical terms (Unit G) was very late and the students received this one week after the expected time. This had a knock-on effect on dates for submission at the end of the course and is reflected in the student comments on postal arrangements. (Question 11 in the final evaluation, Appendix C). Examples are:-

"I would have preferred to receive the units on the same day each week, then I would have know how long I had to return them."

"Actually mostly "yes" (i.e. satisfied) - but on a couple of occasions the units arrived 2 or 3 days later than expected. The Easter break - with a personal 10 day break from home - caused a huge pile-up of units, assessment and assignments

which meant I hadn't time to do final test."

These problems may appear to be particular to the institution rather than to the general development of distance learning but are included here because of lessons to be learned. Problems of production are inherent in institutions which have many calls upon their professionals' time. The development of this course was only one of a multitude of tasks which the Polytechnic Design Unit had at this time. We are sure that this problem of production of teaching units may apply to other institutions planning similar courses.

5. EVALUATION

(i) Evaluation of individual units

The estimate of 4/5 hours per unit was really somewhat of a guess. Therefore, we were delighted at how near to this we were. Particularly pleasing was the movement from a shorter time for Unit A, plus perceptions of it being easy, to a gradual increase of time and level of difficulty.

Time Taken	Unit	V.Easy	F. Easy	Just Right	F. Diff.	V. Diff
122 mins	A	3	11	5	2	-
127 "	B	2	9	10	1	-
160 "	C	-	6	8	8	-
182 "	D	-	5	11	5	-
156 "	E	6	7	6	-	-
191 "	F	-	1	12	5	-
209 "	G	-	1	5	12	1
200 "	H	-	2	7	8	-
154 "	I	2	4	6	3	1

Level of interest

Unit	V. Boring	Boring	Variable	Interesting	V. Interesting
A	-	1	10	10	-
B	-	-	12	8	2
C	-	-	9	11	2
D	1	-	4	13	3
E	-	3	5	10	1
F	-	2	8	7	2
G	-	2	5	10	2
H	-	1	6	10	-
I	-	-	4	12	-

Usefulness to work

Unit	C. Useless*	F. Useless	F. Useful	V. Useful
A	-	4	15	1
B	-	3	18	1
C	1	4	16	1
D	2	3	16	-
E	1	5	13	-
F	1	6	12	-
G	3	3	13	-
H	1	3	13	-
I	1	1	13	1

* comparatively useless (but see comment in text)

One problem common to most short courses is that of the mixed ability nature of the group. The student's background is varied as is their feeling of confidence in being able to cope. Because of this it was decided to try to ease the student gently into the conceptual difficulties and hope that in so doing the early units did not bore those who found them too easy. This strategy seems to have been successful on the whole, although as noted earlier 2 students who did not complete the course thought the early units too easy.

We were particularly heartened to note that the majority of students considered they had achieved the unit's objectives. Closer examination of those not achieved showed that it was sometimes because of a semantic error rather than a teaching problem. However, specific weaknesses in our units were high-lighted - particularly the teaching of semi-logarithmic graphs and the use of computer printout. Both of these points have been re-written and developed for September.

TELEPHONE CONTACT - At the outset of the pilot course we were seriously considering whether an answer-phone service would be necessary. However, it is noted that the majority of the students did not feel the need to telephone the tutor. From our side of the telephone it seems that the most valued use is that of a call from the tutor or organiser at the beginning of the course so that "a voice can be put to a name" as one student expressed it. Knowing that a telephone link exists if needed is probably the best use of the telephone. It was noted that a few students tried but could not make contact with the tutor. This will be given more attention.

Wished to	Obtain further information		Tel.Tutor		Write Tutor	
	Yes	No	Yes	No	Yes	No
A	10	11	2	15	3	18
B	9	12	2	20	1	21
C	10	11	2	19	3	18
D	5	16	-	21	1	20
E	5	13	1	18	1	18
F	6	13	-	19	-	19
G	4	14	-	19	-	19
H	5	12	1	16	1	17
I	4	12	-	16	-	16

READING LIST - The use of the reading list which was provided in the Introduction to the course was interesting. The majority of the students did not wish to read from the list or read more widely but rather more expressed a wish to be directed for specific readings.

Wished to	read from list		specific reading		wider reading	
	Yes	No	Yes	No	Yes	No
A	9	12	8	13	1	20
B	5	17	8	14	2	20
C	5	16	10	11	3	18
D	3	18	6	15	4	17
E	1	17	3	15	1	18
F	2	17	4	15	1	18
G	3	15	3	15	-	18
H	1	16	1	16	2	15
I	1	15	2	14	1	14

this was also reflected in the Final Evaluation where 15 students answered that they would have preferred specific readings to be incorporated within the text.

As a result of many discussions and bibliographic searching, the decision has been reached to compromise with an annotated bibliography, rather than be prescriptive as to further reading. This, we feel, will allow for the "mixed ability" nature of the student group. It is very difficult to prescribe specific readings which will satisfy all needs. Instead it is hoped that the student, by reference to the annotations, will be able to select at the required level.

(ii) End of Course Evaluation

This was delivered approximately one fortnight after the course was complete. Some of the answers given by the students have already been commented upon. This next section comprises those questions and answers not discussed in the previous sections.

QUESTION 1

We were particularly pleased to note that the majority of students felt that they had achieved the course aims, which follow:

Aims of the Course

At the end of the course the student will be able to

		Yes	No	No answer
a)	Decide how to present any set of data to best advantage	10	0	+2

b)	Present information so as to attract the reader	18	0	+3
c)	Understand more readily data presented to you	17	2	+2

These facts convinced the course team that the course would not need drastic re-writing or reformulation.

QUESTION 6

"Would you have preferred to have these units as a complete study package without the tutor contact, marking and assessment?"

No student would have preferred the units as a study pack without tutor marking or assessment. This may be result of recruitment for the pilot course and there may well be a demand for producing the units as a free-standing study pack but more market research would be needed here.

QUESTION 7

"Would it have been feasible for you to have used a computer to generate tables or graphs?"

One interesting point to note was that only 4 students would have access to computers to generate tables or graphs.

QUESTION 8

"If it had been possible, would you have liked face to face contact with your tutor?"

7 of the students would have liked face to face contact with the tutor. This means that whilst the majority preferred totally distant learning, a sizeable minority may respond positively to the idea of day-schools or tutorials of some sort. This is not possible within the conceivable future but may be noted by other course planners.

QUESTION 10

"Would you like to do other distance learning courses?

	Yes	No	No answer
a) in statistics	5	15	(+1)
b) in other fields of librarianship	12	7	(+2)
c) other courses outside librarianship"	9	9	(+3)

We were rather disappointed to note how few students wanted more courses on statistics but on consideration decided that this may be just a reflection of the nature of recruitment for the pilot course.

We were encouraged by the fact that the majority wished for courses in other subjects, proving, within this limited group, that there is a demand for distance learning courses.

QUESTION 11

"Were you satisfied with the postal arrangements for the course?"

QUESTION 12

"Were you satisfied with the telephone arrangements for the course?"

The postal and telephone arrangements were on the whole considered satisfactory, but we did have some pertinent comments, for example the following:-

"I would have preferred to receive the units on the same day each week, then I would have know how long I had to return them."

"I think 1 week intervals are too short. 2 weeks would be better, particularly for people in full employment."

"On the occasions when one of the .... students tried to telephone someone they normally had no success in finding the right person or the information required."

"I was unable to reach the course tutor on the telephone, but this did not matter too much as I only wanted to ring twice."

"However it was difficult to contact anyone towards the end of the course, presumably because this fell in the Easter vacation."

COURSE CONTENT - The content was considered by the majority to be satisfactory.

QUESTION 14

Would you have liked more or less detailed explanations included in the text?

more	5	No
the same	12	answer
less	3	(+1)

QUESTION 15

Would you have liked more or less subject matter to have been included?

more	6
the same	15
less	0

QUESTION 16

Would you have preferred more or less worked examples in the text?

more	5
the same	13
less	3

Question 17

Would you have preferred more or less self marked exercises?

more	1
the same	12
less	8

Some students found the number of self-marked exercises to be excessive and repetitious. This cirticism has been met by incorporation EITHER/OR choices in the new course.

6. SEPTEMBER COURSE

(i) Rewriting

As noted earlier, the pilot course has been evaluated and re-written in the light of criticisms. the use of evaluation sheets for each seprate unit allowed the students to tell us many specific editorial points which we had missed and to pin-point areas of confusion. There were individual differences in reaction to the materials but two broad areas of weakness emerged.

a) Use of computer printout

The students felt that we had not explained fully how they were to use these. This fair criticism is being met by producing a Computer Pack, separate from the units, which holds the relevant instructions and print-out. This has the advantage of allowing us to up-date the computer element as it is changing so rapidly.

b) The teaching of semi-logarithmic graphs

This part of Unit H has been completely re-written and expanded.

ii) Recruitment

(See yellow leaflet, Appendix C.)

Recruitment is taking place with the help of a mailing out firm. The information leaflet has been sent to every public and academic library. Articles about the course have appeared in Open Learning Systems, Northern Librarian and eventually, it is

hoped, New Scientist and INFORM.

A new enrolment form had to be devised for this course as the present Polytechnic systems assumes the physical presence of the student. As part of this new system it was felt necessary to insist that the students pays the £40 fee before being registered as a student. This is a departure from the usual habit of sending the bill after the course has begun.

We are encouraged by the fact that to day (July 19) 24 students are enrolled for September, having already paid their £40. We have no doubts that we will meet the target of 25 by September.

7. THE FUTURE

a) The School of Librarianship and Information Studies has been approached by Loughborough Univeristy School of Librarianship with a view to a collaboration of some sort.

b) We have been asked by other staff in Newcastle Polytechnic to give advice on developing similar materials themselves. This we see as one of our priorities for the coming year.

c) Two colleges of F.E. have asked about the possibility of running the course themselves.

d) Joint talks are taking place with staff from Leeds Polytechnic with the object of joint production of Open/Distance learning materials.

e) Decisions are being taken by the School of Librarianship on what the next course in distance learning will be. This is dependent upon many factors, not the least being the support of outside funding.

8. SUMMARY AND CONCLUSIONS

The evaluation of the pilot course encourages us to think that distance learning is a feasible method of up-dating the skills of middle-management librarians. Developing such courses is costly of staff time but it it rewarding in that it reaches previously un-tapped markets.

The presence of a research worker supported by the PICKUP grant has been critical to this project. To have someone whose sole commitment is to the project has been invaluable. All the other staff involved have many other professional responsibilities and to have one person who can contribute to the running and development has helped enormously.

We are confident at this point of the project that the September course will recruit well and that skills learnt from this experience can be transferred elsewhere.

L. Blackie

APPENDIX E

STATISTICS FOR LIBRARIANS

Presentation of data

Final Evaluation of September 1983

Lipman Building,
Newcastle upon Tyne Polytechnic
Newcastle upon Tyne
NE1 8ST

Tel: 0632 612181

SECTION A COURSE EFFECTIVENESS

1) The aims of this course were to help you to acquire the ability to:

a) Decide how to present any set of data to best advantage in order to convey information clearly and accurately.

b) Present information so as to attract the attention and interest of the reader.

c) Understand more readily the data presented in documents that you read or machine based sources that you use.

Please tick the appropriate box to show which of these aims you have achieved.

	yes	no
a	16	3
b	18	1
c	15	4

2) Did this course meet your expectation?

yes	10
no	9

If your answer was 'no' please state below why.

1. Expected it to be more concerned with mathematical statistics (5 students)
2. Not happy I am able to decide which is the best way to present different types of data - otherwise well satisfied.
3. Expected it to cover all the topics in Ian Simpson's book
4. Unable to complete the course

3) Was our estimate of the average time to be spent per week (4/5 hours) correct

yes	8
no	11

If your answer was 'no' please state below why.

No average answer here

Everything on the continuum from ½ as long to twice as long

4) Please tick in the accompanying box if you found the course useful in terms of

a) career needs

b) personal interest

c) specific job problems

	yes	no
a	13	6
b	16	3
c	13	5

5) Please indicate below at what career stage you think someone would most usefully benefit from this course.

1. Assistant County Librarian and jobs "lower down"
2. Most professional staff, but particularly middle/senior management (4)
3. No particular career stage
4. Junior/middle management 4.
5. 2 - 3 years after library school
6. Early in career 3.
7. Anyone collating statistics 3.
8. As refresher course.

6) Would you have preferred to have these units as a complete study package without the tutor contact, marking and assessment?

yes	2
no	16

Please explain why.

1. Would prefer package with tutor contact
2. Too daunting without tutor etc.
3. Too easy to drop behind
4. Important to have feed back (6)
5. Wouldn't have done the work (2)
6. Prefer assessment, even if it costs more
7. Preferred even more tutor support

7) Would it have been feasible for you to have used a computer to generate tables or graphs?

yes	5
no	14

If 'yes' please state what computer and software would have been available.

1. S.P.S.S. on Harriss
2. ICL 2950 S.P.S.S.
3. BBC Acorn 'Graph and Chart' software
4. Sirius micro + Minitab or ICL 2988 + SPSS

8) If it had been possible, would you have liked face to face contact with your tutor?

yes	9
no	10

If 'yes' please say how often.

1. Week-end school, mid-term
2. So regularly it would not have been distance-learning!
3. three times (2)
4. once (2)
5. Once/twice to cut down isolation (2) 6. 2-3 times during but ½-1 hr. at end of course

10) Would you like to do other distance learning courses?

	yes	no
a) in statistics	9	7
b) in other fields of librarianship	13	3
c) other courses outside librarianship	12	5

Please say which areas of librarianship would interest you.

Stock editing
Staff management (3)
Computer Use
Educational fields
Printing
Public Relations (2)
Cultural Activities in the Community
Management skills (5)
Systems librarianship
Cataloguing
Planning
Communication

continued ...

Data-base creation and management
Evaluation of services
Library design
Copyright Law
Racism/sex in books
User Education

SECTION B COURSE ADMINISTRATION

11) Were you satisfied with the postal arrangements for the course?

yes	15
no	-

If 'no' please state why.

12) Were you satisfied with the telephone arrangements for the course?

yes	13
no	2

If 'no' please state why.

1."Could not get through to the Department"

2."Could not get an answer during the Christmas holiday when I was working on my assignment"

13) Would you have preferred more flexibility in receipt of the units e.g. all the units delivered together at the beginning of the course or in three separate blocks?

yes	4
no	11

If 'yes' please explain why.

1. Time available to work on units varied widely

2. Prefer to proceed at my own pace. I found I was waiting for the units to arrive

3. 3 separate blocks would have meant a greater level of continuity and the ability to work at my own speed

SECTION C COURSE CONTENT

14) Would you have liked more or less detailed explanations to be included in the text?

more	2
the same	15
less	2

15) Would you have liked more or less subject matter to have been included?

more	9
the same	9
less	1

If the answer was 'more' please list what you would have liked to be included if possible.

1. Compilation and analysis
2. Use of computer packages
3. Type of material in Ian Simpson's book
4. Greater depth of subject
5. More examples from library world
6. Basic concepts of statistics
7. Longer course
8. Probability and Chi-squares
9. Some discussion on applications

16) Would you have preferred more or less worked examples in the text?

more	5
the same	12
less	2

17) Would you have preferred more or less self marked exercises?

more	4
the same	10
less	4

18) Do you think that the three tutor-marked tests gave you sufficient information on your progress?

yes	11
no	1

If 'no' what would you have preferred?

"I was expecting something more detailed, similar to the Open University Tutor Marked Assignments"

18a) If you did not submit the optional tests, what were your reasons?

a) Not enough time

yes	6
no	1

b) Did not feel the need

yes	3
no	2

c) Other reasons

1. Errors on test papers
2. Pressure of work
3. Eye-sight problems
4. Could not complete tests in time

19) Did you consider the subject matter of the questions and examples appropriate?

yes	18
no	1

SECTION D COURSE FORMAT

20) Were you satisfied with the general quality of production?

yes	15
no	4

If 'no' please state why.

1. Semi-log paper was shoddy
2. Errors in text, though trivial, "threw" me
3. Several errors appeared in test questions and text
4. Several typing errors misleading. Answers could have been more fully explained.

21) Would you have preferred specific references to further reading to be incorporated into the text?

yes	7
no	11

22) Would you have preferred a wider reading list?

yes	3
no	15

23) Did you acquire a copy of any of the books for further study given in the introduction?

yes	6
no	11

If 'yes' please list the titles.

1. ALL
2. They were unavailable from library or already on loan
3. Erricker, Lewis, WArd, Simpson I.
4. Yeoman, Simpson
5. Simpson, I.

24) Did you use any other books or articles?

yes	4
no	13

If 'yes' please list the titles.

1. (Loveday, R.A. A short course of elementary statistical diagrams, C.U.P. 1963.
   (Fred Learns Basic Statistics. Continua Publications, 1975.
2. Alan Cooper - Introduction to Statistics, Claim, 1982.
3. D. Rowntree : Statistics without tears (Penguin)

25) Would you have preferred a wider or narrower reading list?

wider	3
the same	10
narrower	3

SECTION E ASSESSMENT

26) The assignment

Please make any comments you wish under the following headings:-

a) Time taken to complete

This response varied from -
20 mins. per week - 2 hours per week - 12 hours - 2 weeks - "Ages"

b) How relevant was the assignment to your needs?

1. Relevant (5)
2. Very relevant (4)
3. Not very relevant (3)
4. All useful (2)

c) Level of difficulty

1. Too easy (1)
2. Not too difficult (4)
3. Just right (9)
4. Quite difficult (2)
5. Sometimes felt I could have misunderstood the question

d) The ease with which the required data could be collected

1. Easily (7)
2. Easy but time consuming (4)
3. Variable (2)
4. Occasionally difficult (2)
5. Easy to invent (1)
6. Unhappy to use data not related to librarianship

26) cont.

e) How interesting did you find the assignment?

Not very interesting - 1
Sometimes interesting - 1
Fairly interesting - 4
Interesting - 4
Very interesting - 4

f) Suggestions for any future assignments

1. Computer print from issue systems
2. Book supply/prices/availability/differing techniques of ordering
3. Staff levels
4. Issues, type of bookstock, use of sections of the library
5. Stock movement, use by category

g) At what point in the course should the assignment be selected and begun?

1. 4th week
2. 1st to last unit with a couple of breaks
3. After completing relevant unit
4. ½ way through
5. Beginning (3)
6. third way through

27) End of course assessment

Please make any comments you wish under the following headings:-

a) Time taken to complete

Continuum

3½ hours - 6 hours - 12 hours - 37½ hours - 2/3 days

1. Difficult to do if not for Christmas holidays
2. Took longer than expected (2)

b) Level of difficulty

1. About right (3)
2. O.K.
3. Seems fairly straightforward
4. Much more difficult than the three tests
5. Fairly difficult
6. Variable
7. Not too difficult - just had to make up my mind, which proved difficult sometimes
8. No problems - except final question which seemed to bear no relation to text
9. Not too difficult
10. Rather hard

c) Usefulness in demonstrating the attainment of the student

1. Fair
2. Pretty thorough and sound (2)
3. Very useful as it covered most aspects of the course
4. Not very useful under non-examination conditions
5. Very useful
6. Very useful because you have either understood or you have not
7. Will probably show quite clearly my weakness of understanding
8. Adequate
9. Useful, provided strong incentive for completing the course
10. Brings together the strands of the course

d) Any other comments

1. Would like to see result - further comment might be generated
2. Minor point - sometimes questions included unfamilar terminology and questions may appear ambiguous
3. Useful to know who else is doing course - self help groups could have been formed
4. More telephone calls from tutor - tele-conferencing between students and tutor
5. I felt I learned a lot from the course and gained sense of achievement
6. Posed hard problems for me - I am not confident I solved them.

We are interested in knowing how easy it is for students to take this type of course

28) a) Were you funded by your employer?

yes	14
no	5

if no

b) Did you ask your employer to pay?

yes	1
no	4

29) a) Could you have obtained full-time secondment for a course on statistics?

yes	2
no	17

b) Could you have obtained part-time secondment for a course on statistics?

yes	7
no	12